Three-way content merge

```
File from branch A:

...
speak_like_a_pirate(arrrrgs);
explore_sea(aye, matey);
shiver(me.timbers);
...
```

Three-way content merge

```
File from branch A:                File from branch B:

...                                ...
speak_like_a_pirate(arrrrgs);      speak_like_a_pirate(arrrrgs);
explore_sea(aye, matey);           explore_sea(me.love[0]);
shiver(me.timbers);                shiver(me.timbers);
...                                ...
```

Three-way content merge

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File from branch A:                 File from branch B:

...                                 ...
speak_like_a_pirate(arrrrgs);       speak_like_a_pirate(arrrrgs);
explore_sea(aye, matey);            explore_sea(me.love[0]);
shiver(me.timbers);                 shiver(me.timbers);
...                                 ...
```

Correct merge depends on the version in the merge base:

```
...
speak_like_a_pirate(arrrrgs);
explore_sea(me.love[0]);
shiver(me.timbers);

...
```

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...                              ...
speak_like_a_pirate(arrrrgs);    speak_like_a_pirate(arrrrgs);
explore_sea(aye, matey);         explore_sea(me.love[0]);
shiver(me.timbers);              shiver(me.timbers);
...                              ...
```

Correct merge depends on the version in the merge base:

```
...
speak_like_a_pirate(arrrrgs);
explore_sea(aye, matey);
shiver(me.timbers);

...
```

Three-way content merge

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File from branch A:              File from branch B:

...                              ...
speak_like_a_pirate(arrrrgs);    speak_like_a_pirate(arrrrgs);
explore_sea(aye, matey);         explore_sea(me.love[0]);
shiver(me.timbers);              shiver(me.timbers);
...                              ...
```

Correct merge depends on the version in the merge base:

```
...
speak_like_a_pirate(arrrrgs);
explore_sea(plus, plus);
shiver(me.timbers);

...
```

Three-way content merge

```
File from branch A:              File from branch B:

...                              ...
speak_like_a_pirate(arrrrgs);    speak_like_a_pirate(arrrrgs);
explore_sea(aye, matey);         explore_sea(me.love[0]);
shiver(me.timbers);              shiver(me.timbers);
...                              ...
```

Correct merge depends on the version in the merge base:

```
...
speak_like_a_pirate(arrrrgs);
explore_sea(plus, plus);
shiver(me.timbers);

...
```

Shorthand:
```
   path
O: sha1sum_orig
A: sha1sum_A
B: sha1sum_B
```

Renames

Rename+Modify, if rename not detected:

	orig_path	new_path
O:	5ca1ab1e...	00000000...
A:	f005ba11...	00000000...
B:	00000000...	b0a710ad...

Renames

Rename+Modify, if rename not detected:

	orig_path	new_path
O:	5ca1ab1e...	00000000...
A:	f005ba11...	00000000...
B:	00000000...	b0a710ad...

Detecting renames:

renames on side A: ...

renames on side B: orig_path $\Rightarrow$ new_path, ...

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Detecting renames:

renames on side A: ...

renames on side B: orig_path $\Rightarrow$ new_path, ...

...allows us to coalesce and do three-way merge:

	orig_path $\Rightarrow$ new_path
O:	5ca1ab1e...
A:	f005ba11...
B:	b0a710ad...

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```
      orig_path    new_path
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 A:   f005ba11...  00000000...
 B:   00000000...  b0a710ad...
```

Detecting renames:

```
    renames on side A: ...
    renames on side B: orig_path ⇒ new_path, ...
```

...allows us to coalesce and do three-way merge:

```
      orig_path ⇒ new_path
 O:   5ca1ab1e...
 A:   f005ba11...
 B:   b0a710ad...
```

Which you may be used to seeing as:

```
<<<<<<< HEAD
explore_sea(aye, matey);
=======
explore_sea(me.love[0]);
>>>>>>> OTHER_BRANCH
```

Renames

Rename+Modify, if rename not detected:

```
     orig_path    new_path
 O:  5ca1ab1e...  00000000...
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```

Detecting renames:

renames on side A: ...

renames on side B: orig_path $\Rightarrow$ new_path, ...

...allows us to coalesce and do three-way merge:

```
     orig_path $\Rightarrow$ new_path
 O:  5ca1ab1e...
 A:  f005ba11...
 B:  b0a710ad...
```

Which you may be used to seeing as:

```
<<<<<<< HEAD:orig_path
explore_sea(aye, matey);
=======
explore_sea(me.love[0]);
>>>>>>> OTHER_BRANCH:new_path
```

Cherry-picking in a repo with lots of renames

Let's get a change we want to cherry-pick:

```
$ git checkout 3.13.4.3-enterprise_patching
$ git fetch origin refs/changes/30/289530/3
$ git log -1 --oneline --name-status refs/changes/30/289530
9327fd6950f QA-98552 Mark objects incoming later
M       modules/.../peering/PeeringSubsetPR.java
M       modules/.../peering/impl/PeeredLinkSetApplier.java
M       modules/.../peering/impl/PeeredObjectApplier.java
M       modules/.../peering/impl/PeeringExportPR.java
M       modules/.../peering/impl/PeeringImports.java
M       modules/.../peering/impl/PeeringPR.java
A       modules/.../peering/SubsetPeeringThreeWayTest.java
M       modules/.../session/TestPeeringDBSession.java
```

Cherry-picking in a repo with lots of renames

```
$ time git cherry-pick 9327fd
error:  could not apply 9327fd6950f...  QA-98552 Mark
objects incoming later
hint:  after resolving the conflicts, mark the corrected
paths
hint:  with 'git add <paths>' or 'git rm <paths>'
hint:  and commit the result with 'git commit'

real    0m13.878s
```

Cherry-picking in a repo with lots of renames

```
$ time git cherry-pick 9327fd
error: could not apply 9327fd6950f... QA-98552 Mark
objects incoming later
hint: after resolving the conflicts, mark the corrected
paths
hint: with 'git add <paths>' or 'git rm <paths>'
hint: and commit the result with 'git commit'

real    0m13.878s

$ git status
...
Changes to be committed:
  new file: modules/.../SubsetPeeringThreeWayTest.java
Unmerged paths:
  deleted by us: modules/.../PeeringSubsetPR.java
  deleted by us: modules/.../PeeredLinkSetApplier.java
  deleted by us: modules/.../PeeredObjectApplier.java
  deleted by us: modules/.../PeeringExportPR.java
  deleted by us: modules/.../PeeringImports.java
  deleted by us: modules/.../PeeringPR.java
  deleted by us: modules/.../TestPeeringDBSession.java
```

Cherry-picking in a repo with lots of renames

```
$ time git -c merge.renameLimit=99999 cherry-pick 9327fd
error: could not apply 9327fd6950f... QA-98552 Mark
objects incoming later
hint: after resolving the conflicts, mark the corrected
paths
hint: with 'git add <paths>' or 'git rm <paths>'
hint: and commit the result with 'git commit'

real    0m13.780s

$ git status
...
Changes to be committed:
  new file: modules/.../SubsetPeeringThreeWayTest.java
Unmerged paths:
  deleted by us:  modules/.../PeeringSubsetPR.java
  deleted by us:  modules/.../PeeredLinkSetApplier.java
  deleted by us:  modules/.../PeeredObjectApplier.java
  deleted by us:  modules/.../PeeringExportPR.java
  deleted by us:  modules/.../PeeringImports.java
  deleted by us:  modules/.../PeeringPR.java
  deleted by us:  modules/.../TestPeeringDBSession.java
```

A handful of git patches later...

```
$ time git cherry-pick 9327fd
```

A handful of git patches later...

```
$ time git cherry-pick 9327fd
warning:  inexact rename detection was skipped due to
too many files.
warning:  you may want to set your merge.renamelimit
variable to at least 48941 and retry the command.
error:  could not apply 9327fd6950f...  QA-98552 Mark
objects incoming later
hint:  after resolving the conflicts, mark the corrected
paths
hint:  with 'git add <paths>' or 'git rm <paths>'
hint:  and commit the result with 'git commit'

real    0m13.873s
```

A handful of git patches later...

```
$ time git -c merge.renameLimit=48941 cherry-pick 9327fd
 Performing inexact rename detection:  100%
(2836767183/2836767183), done.
error:  could not apply 9327fd6950f...  QA-98552 Mark
objects incoming later
hint:  after resolving the conflicts, mark the corrected
paths
hint:  with 'git add <paths>' or 'git rm <paths>'
hint:  and commit the result with 'git commit'

real    9m8.790s
```

A handful of git patches later...

```
$ time git -c merge.renameLimit=48941 cherry-pick 9327fd
Performing inexact rename detection:  100%
(2836767183/2836767183), done.
...
real    9m8.790s
```

A handful of git patches later...

```
$ time git -c merge.renameLimit=48941 cherry-pick 9327fd
Performing inexact rename detection:  100%
(2836767183/2836767183), done.
...
real    9m8.790s


$ git status
You are currently cherry-picking commit 9327fd6950f.
...
Changes to be committed:
  new file:  modules/.../SubsetPeeringThreeWayTest.java
  modified:  pg/gotham/.../PeeredObjectApplier.java
  modified:  pg/gotham/.../PeeringExportPR.java
  modified:  pg/gotham/.../PeeringPR.java
  modified:  pg/gotham/.../TestPeeringDBSession.java
Unmerged paths:
  both modified:  pg/gotham/.../PeeringSubsetPR.java
  both modified:  pg/gotham/.../PeeredLinkSetApplier.java
  both modified:  pg/gotham/.../PeeringImports.java
```

Dozens of git patches later...

```
$ time git -c merge.renameLimit=48941 cherry-pick 9327fd
Performing inexact rename detection:  100%
(2836767183/2836767183), done.
...
real    9m8.790s


$ git status
You are currently cherry-picking commit 9327fd6950f.
...
Changes to be committed:
  modified:  pg/gotham/.../PeeredObjectApplier.java
  modified:  pg/gotham/.../PeeringExportPR.java
  modified:  pg/gotham/.../PeeringPR.java
  new file:  pg/gotham/.../SubsetPeeringThreeWayTest.java
  modified:  pg/gotham/.../TestPeeringDBSession.java
Unmerged paths:
  both modified:  pg/gotham/.../PeeringSubsetPR.java
  both modified:  pg/gotham/.../PeeredLinkSetApplier.java
  both modified:  pg/gotham/.../PeeringImports.java
```

Three series of git patches later...

```
$ time git cherry-pick 9327fd
...
real    0m15.873s


$ git status
You are currently cherry-picking commit 9327fd6950f.
...
Changes to be committed:
  modified:  pg/gotham/.../PeeredObjectApplier.java
  modified:  pg/gotham/.../PeeringExportPR.java
  modified:  pg/gotham/.../PeeringPR.java
  new file:  pg/gotham/.../SubsetPeeringThreeWayTest.java
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Unmerged paths:
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  both modified:  pg/gotham/.../PeeredLinkSetApplier.java
  both modified:  pg/gotham/.../PeeringImports.java
```

Submitting Upstream

- https://public-inbox.org/git/20171110173956.25105-1-newren@gmail.com/
- https://public-inbox.org/git/20171110190550.27059-1-newren@gmail.com/
- https://public-inbox.org/git/20171110222156.23221-1-newren@gmail.com/

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When I told folks that "You don't need these special scripts to cherry pick things; just set merge.renameLimit to something higher," they responded that merge.renameLimit didn't work.

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I didn't believe them.

These git patches represent my attempt to continue to not believe them. :-)